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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,277	01/27/2004	Decai Sun	LUM-03-06-01	3462

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PATENT LAW GROUP LLP  
2635 NORTH FIRST STREET  
SUITE 223  
SAN JOSE, CA 95134

EXAMINER
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SOWARD, IDA M

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

10/766,277

Applicant(s)

SUN, DECAI

Examiner

Ida M. Soward

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,14 and 17 is/are rejected.
- 7) ☒ Claim(s) 3-13,15,16,18 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1-27-04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

This Office Action is in response to the application filed January 27, 2004.

### *Drawings*

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character:

1. **"9C"** has been used to designate both **thick contact layer** and **semiconductor layer under reflector** in paragraph [0015] of page 4;
2. **"10C"** has been used to designate both **semiconductor layer under reflector, large reflective sheet** and **under reflective sheet** in paragraphs [0016] and [0017] of page 4; and
3. **"4"** has been used to designate both **highly doped layers** and **heavily doped layers** in paragraph [0017] of page 4.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of

any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludowise (US 2005/0045893 A1) in view of Cho et al. (5,226,053).

Ludowise teaches a semiconductor light emitting device comprising: a light emitting region 6 disposed between a region 7 of first conductivity type and a region 5 of second conductivity type (abstract, page 1, paragraph [0007], Figure 1A, page 1, paragraph [0020]).

However, Ludowise fails to teach at least one heavily doped layer disposed within the region of first conductivity type, wherein the heavily doped layer is more heavily doped than the region of first conductivity type.

Cho et al. teach at least one heavily doped layer 12 disposed within the region of first conductivity type 12-14, wherein the heavily doped layer 12 is more heavily doped than the region of first conductivity type 13-14 (Figure 1, column 7, lines 47-66).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor light emitting device

structure as taught by Ludowise with the semiconductor light emitting device having at least one heavily doped layer disposed within the region of first conductivity type, wherein the heavily doped layer is more heavily doped than the region of first conductivity type as taught by Cho et al. to provide a semiconductor light emitting device with improved light emitting characteristics suitable for optical fiber communication (column 2, lines 41-43).

In regard to claim 2, Ludowise teaches the light emitting region comprising at least one layer of InGaP (page 2, paragraph [0020]).

In regard to claim 14, Ludowise teaches the region 7 of first conductivity type and the region 5 of second conductivity type are cladding layers adjacent to the active region 6, the device further comprising: a contact region 8 of first conductivity type adjacent to a surface of the cladding layer 7 of first conductivity type opposite the active region 6 (Figure 1A); and a contact region 3 of second conductivity type adjacent to a surface of the cladding layer 5 of second conductivity type opposite the active region (Figure 5) (page 2, paragraph [0020]).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ludowise (US 2005/0045893 A1) as applied to claims 1-2 and 14 above, and further in view of Cho et al. (5,226,053).

Ludowise teaches all mentioned in the rejection above.

However, Ludowise fails to teach the region 12 of first conductivity type and the region 17 of second conductivity type are contact regions; the contact region 12 of first

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conductivity type is spaced apart from the active region 15 by a cladding region 14 of first conductivity type; and the contact region 17 of second conductivity type is spaced apart from the active region by a cladding region 16 of second conductivity type (Figure 3, column 7, lines 54-66).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor light emitting device structure as taught by Ludowise with the semiconductor light emitting device having the region of first conductivity type and the region of second conductivity type are contact regions; the contact region of first conductivity type is spaced apart from the active region by a cladding region of first conductivity type; and the contact region of second conductivity type is spaced apart from the active region by a cladding region of second conductivity type as taught by Cho et al. to design light emitting device with improved light emitting characteristics (column 2, lines 41-43).

### ***Allowable Subject Matter***

Claims 3-13, 15-16 and 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to semiconductor light emitting devices:

Guido (5,614,734)	Khare et al. (US 2003/0205717 A1)
Kish, Jr. et al. (6,015,719)	Lebby et al. (5,498,883)
Lee et al. (US 6, 720,570 B2)	Trussell, Jr. et al. (4,371,968)
Ueda (US 2003/0089906 A1).	

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M. Soward whose telephone number is 571-272-1845. The examiner can normally be reached on Monday - Thursday 6:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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~~John M. Sousa~~  
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